

AVIATION WEEK

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MAR. 19, 1951

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Model A-10
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Model A-13



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Model A-12



Model A-10



Model A-1000



Model A-13



Model A-12

Model A-10

Model A-13

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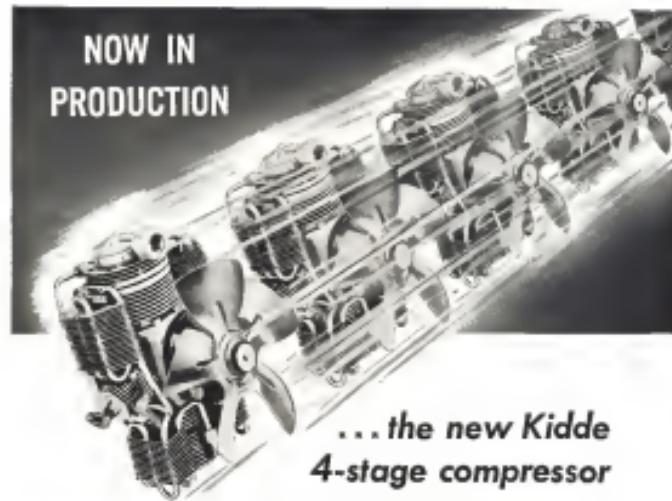


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Aviation Week



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Dual Control... 1914



Over 35 years ago, Billy Parker taught students from the left-hand seat of this dual control plane. You prod R90 or so back to put part forward of the lower leading edge and trim the rest of your plane as necessary necessary to qualify for an Army Cadet pilot's license.



Dual Control... 1951

Same idea... different temps! This dual control jet trainer is a Lockheed T-33C "Shooting Star," used for teaching jet combat tactics, gunnery and high speed evasions. The student sits in front, with an instructor for back-seat duties. Fully instrumented cockpit, front and rear, allows the plane to be flown at 600 mph by either pilot.

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NEWS DIGEST

DOMESTIC

Approval of Douglas DC-6A and B by CAB will be finalized soon, says the Aircraft Safety division's chief, George Blaustein. Problem at control center under the sole quota of gravity loading requested by both USAF and airlines is the same detail will not yet get by CAB. United Air Lines is testing its first DC-6A.

Boeing has four bases and operations at eight airports covering passenger service between San Francisco and Los Angeles has been ordered by California's State Public Utilities Commission. PUC claims the carriers are charging higher fares (as to \$11.700) than it has authorized (\$9.95 to \$9.96). CAB has approved rates to 111 airports. PUC feels, since the state is a non-state, no approval is also needed.

Present hourly pay boost based on an increase in the contractor's price index, has been given to the 72,000 hourly rated employees in United Aircraft Corp. The cost of living allowances, administered by UAC, now total eight cents an hour.

Holte O. "Bodie" Nelson, regional vice president of Frontier Airlines, died at Tucson Mar. 4 of a heart attack. He was 46 years old. Nelson headed Arizona Airways at the time of its merger with Midwest Air Lines and Chief Senator Airlines to form Frontier Airlines.

Recently established Services Branch of Air Material Command has taken over all field responsibilities for all USAF activities in the food field, maintenance, safety, and plane services, laundry and dry cleaning, general registration and maintenance work, and will handle all civilian work at ANG Wright-Patterson Air Force Base center. Many of these functions formerly were performed by Army but have been allocated to USAF under 1947 National Security Act.

Initial class of 135 aviation cadets has arrived at reactivated General's AFB MacDill, which is to operate under general contract by Gantman Aviation, Butler, Fla. Flying training will get underway April 4. When pilot training has just begun, there will be about 335 civilian instructors, approximately 500 cadets and a total of 161 North American T-6s.

USAF's Douglas Super DC-3 has been redesignated YC-47E. It previously was called the YC-129. Now it is known as R-47.

Russell Field, N. Y. invents have retained their aviation status, based on the cost of the world war, and the project, which is called Captain Curtis Davis, was the name of each aviation liaison, including Lindbergh's friend in Paris. The property has been so used for industrial use.

Prairie Helicopters Corp. has received Navy orders for a modified version of the HU-16A helicopter. The order concerns a backlog to around \$100 million.

C. S. Crey Jones, president of the Academy of Apprentices, LoGren Field, and Wald 1/2 mile, is pilot and racing pilot of the 1938s has been elected president of the National Air Council. F. R. Borth of the U.S. Steel Corp. has been elected treasurer of the council and member of the board of managers.

Glen B. Hubbard, former aviation manager of the Los Angeles chamber of commerce has been designated by National Aviation Association as a vice-president and assigned to a project of increasing NAA membership, with primary emphasis on West Coast membership activity.

FINANCIAL

Mid-Continent Airlines reports a net profit of \$22,120 for Jan. 1951, after provision for income taxes, compared with \$5012 in Jan. 1950. Operating revenues were \$750,803 for Jan. 1951, \$22,507 over the same period the previous year. Passenger load factor was up to 59.11 percent.

Curtiss Wright Corp. reports for year ending Dec. 31, 1950 profit of \$7,275,564 after taxes on sales of \$175,657,064.

INTERNATIONAL

Fokker Sales products by Canadian Ltd., Montreal, will soon reach 20 countries, with output slated for a stepped up 50 a month.

IATA Clearing House transactions during 1953 totalled \$147,652,000, a ten percent rise over 1952, despite the continued reduction in tonnage handled by members of IATA with PAA, and British South American Airways with BOAC. December's total was \$12,074,000, the second highest monthly turnover recorded since operations started in 1947.



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 of faster planes

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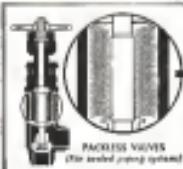
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SIDLIGHTS

Congress

Chair's Sub-Committee will soon introduce a bill that would require CAB to begin preparing legislation to transfer its Interstate & Foreign Commerce Committee. His staff is now drafting a report on domestic transportation, based on hearings held last year by a Senate subcommittee.

Airlines

ATA says ad judgment for U.S. scheduled airlines to sue the CAB over the proposed IATA Lodge 1599 will permit in CAB to raise rates, subsidies and other expenses should be charged parking fees at Washington Airport under a proposed plan... PAA spokesman say they won't compromise to a single North Atlantic route west from Miami, should the time when recommended by PAA & TWA come around. "We are not going to compromise before the day we already voted for a vote in Congress for emergency legislation," says aviation on the Administration has decided on a three month CAA bill but makes more than the plus or minus it carries. "It's a lot more than room one can afford," says Wren. "The same can be said for the Administration," says CAB Vice Chairman, Ryan, a Federal judge.

People

Ed Roush's run to Moscow to talk to top government officials there about a bilateral air agreement was at a personal cost of \$20,000. That's what the New York Times says. Washington, however, Roush's influence is high at the White House. Ed Roush, formerly another prominent director of American Airlines, is now special assistant to the Senate of Small Business, Chicago, department, says

Senate Gothic, RALS, public relations director, who was at the Moscow talks in April after a secret strike. Chicago County, former Republican Senator from North Dakota was replaced by the Senate in CAA member to succeed Howard Cannon, now assigned

Here & There

New center autopilot, a five-year contract to design Eclipse Dynamics reported has been completed. The center is the first at NASA's experimental station at Palmdale where used as a big Silverside 100/100/100 in combination with the test's by satellite control system... Carl Defense Administration will set up a separate test center to work out and demonstrate with satellite control system. The center is a venture NASA, which loaned CDA, to drop its original plan to have an orbiting test satellite by an over-all transportation and

Ed Wachs' experimental aircraft plan has reported that longer and more trials of the aircraft will be coming to the airport or more trials in a month's time. CAS Aviation Safety now achieves repeat leaders from plane's limitations, use a self warning device, know (Continued on page 33)



SHAEFLE AMBASSADOR—Fairchild prototype of the 47 passenger Airspeed Ambassador is seen in British European Airways markings. Powered by two Bristol Centaurus 1600 horsepower engines, the transport can fly 3100 mi. at 280 mph with 7700-lb. payload.



Picture Highlights Of the Week

ALL-WEATHER FIGHTER—Two-place Lockheed F-94B all-weather interceptor (above) sports new increased capacity wing tip fuel tanks. Now in production, along with the F-94C (FW-140), the Allison J-35 powered F-94 is claimed to be



ROCKET TEST—Fairchild North American Aviation rocket motor (left) and the use of a V-2 motor in aircraft static testing (left) at the company's Brant Street Aerophysics Field Lab.

FIRST "FLIGHT"—A Martin F5M1 Meteor (left) comes through dust on its way to an assembly stage at Baltimore, Md.



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also be used in any power circuit, for excitation

supply, having a unique rating characteristics output

of 23 to 33 in apercu DC and 140 to 1700 in RHE output

of 200-1000 cycles and more in a speed range of 2000-10,000 rpm.

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WHO'S WHERE

In the Front Office

Albert G. Biedenkapp, 30, has been named vice president of Lear, Inc., and given up his position as assistant to the president to become assistant general manager of the company's Canadian subsidiary. He joined Lear in 1948 after serving as claimman on several major air-lobbying committees during World War II.

W. F. "Tom" Mark has been made to remove vice president and member of the board of United Aircraft Products, Inc., Dayton. Mark formerly was with Wright Aeronautical as a project engineer and was last serving as spokesman and liaison manager and advocacy development.

Stephane R. Thivierge, recently appointed deputy director general of the International Air Transport Assn., has taken up his duties in the Montreal headquarters, following a two-month tour in Europe investigating himself with the work of the IATA's traffic committee.

Changes

Paul Gossard, 32, has been appointed chairman of the board of the Canadian Institute of Practice Optometry, filling the vacancy created by appointment of Prof. Donald C. Styrz to the Presidential Research Council.

Charles L. Hall has been named technical representative in charge of Bell Canada's new Gayles office. A. W. MacLellan has been appointed manager, reporting directly to the general manager of the San Joaquin Dodge division. John A. Smith has been named assistant to the vice president of Continental Air Lines to handle federal agency and legislative matters. Fred E. Pihl has been appointed to a higher post in the company's cargo sales management.

John E. Bawden has been appointed as the newly created post of advertising manager for British International Airways. J. M. Webb has been named to the new position of supervisor of operations and maintenance, reporting to Vice President F. E. Willis. Willis has been made director of administrative operations and N. E. Taylor has been appointed director of economic studies for Trans-Canada Air Lines.

Honors and Elections

J. M. Lashlee, a director of Convair since 1951, has been made chairman of the committee committee of Convair's board of directors. Gen. Ralph Kayser has been elected to the board of directors of the National Guard. **Major Gen. Edward M. Powers** (32 years), vice president and director of engineering of Curtiss-Wright, has been named to C-W's board.

William D. Strohmeier, very prominent of advertising firm Duren-Purcell, Inc., has been elected to the board of directors of **Elmer Schlesinger**, a producer of U.S. Helicopters, Inc. Duren-Purcell has been named president of the Cuyahoga Helicopter Assn. via the IHD.

INDUSTRY OBSERVER

► Canadian military sources say that the Avro CF-100 night fighter will outperform the supersonic F-104 fighter at high altitudes.

► Delivery of the long-delayed Curtiss-Wright solar motor for the Bell X-1 supersonic research plane is now due early this summer. The two-motor, two-blade propulsor develops about 15,000-lb-thrust. With many test runs yet to be performed the test flight trials to date are considered satisfactory.

► CAA certification of the Alouette T-38 turboprop is still a long way off. Alouette expects to put enough time on its Turboliner to work out a lot of operational problems before it gets around to certification procedure.

► Long-maneuvered transport safety practice of certifying renewed aircraft as if they had never been taken off is about to become a reality after Great Britain's The United Kingdom's Air Registration Board has issued new regulations for aircraft renewal and aircraft renewal and aviation development.

► Operations of two American helicopters, a Bell 47D and a Hélicoptère 360 in two Italian companies, for aerial photography, passenger logging and spraying for malaria control, have proved so profitable that the Italian operators, Avimil and Eleti, are seeking additional machines. But they are running into production problems due to large military orders held by the American manufacturers.

► The supersonic Curtiss-Wright T-33A fighter jet has recently managed to speeds in high as Mach 1.8 in wind-tunnel tests.

► The new Boeing C-97G transports recently delivered to the USAF with a heated up fuselage and a one-ton greater maximum payload with a few minor modifications, will be the standard C-97 for Boeing's huge mass production order for MATS. Flush-mounted antenna and wing anti-icing leading edges identical with those used on the C-97B bomber are other features. Boeing's Flying Boom aerial refueling equipment is now designed for quick installation and removal on C-97s as well as C-130s.

► A modification of the Douglas C-124 landing gear in a four-wheel gear like that of the Convair C-135 may be forthcoming in response to Army's evaluation of the airplane's hazard capabilities in operating in small forward areas bases.

► Boeing has disclosed that one or the other of two forms of aerial refueling equipment are now standard equipment on its C-135 super transports in service. Large B-50s are fitting the Seattle plant equipped with refueling equipment for the Flying Boom refueling system, while smaller B-50s and B-50s are equipped for the British flight refueling hose and reel system. B-52 refueling tanks are designated KB-509 when they are equipped with the boom system, and KB-204 when they have the hose and reel.

► Lockbourne AFB, near Columbus, Ohio, seems to become a Strategic Air Command base, is getting a new 500-ft runway to accommodate B-52 and B-47 bombers. But an Air Force spokesman has denied reports that Lockbourne would become SAC headquarters instead of Offutt AFM at Omaha.

► Lockheed and the Union of South Africa are negotiating over purchase of eight Lockheed F-104 longrange patrol bombers, the version equipped with Wright Turbo-Cyclone engines, to be used by the South African Air Force for control defense. In addition SAAF is receiving 10 new Vampire fighter jets now on order from de Havilland.

► Stanley Aviation Corp., Buffalo, N. Y., has developed an ejection seat for use by heavier crewmen on high speed jet bombers. The ejection seat will throw the crewmen clear through the floor of the exploded plane. Company reports orders will come Boeing B-57 and B-52 bombers with the escape seats.

Washington Roundup

Important People

• Charles E. Wilson, Polkton got the Defense Mobilization chief six months earlier at the outside—to stay in Washington.

He's used to see Defense Mobilization like a business. It can't be done in Washington. Too many political factors have to be considered.

Wilson's revolt is only the first open outbreak against the Wilson agenda. Obviously, labor's kick at Wilson's desire to put labor representation on his committee, and, to a lesser degree, to freeze wages. Arbitrarily, labor's biggest concern is that efficient businessmen like Wilson will arbitrarily cut off civilian production for defense purposes, causing far worse local unemployment. And, they're right about that—Wilson has his way.

Businessmen like Wilson can't see managing peace defense contracts to a small Defense Policy Corp for policing out to small contractors. They argue it represents an inefficient, and less cost, all the contractors. But compensation promised by the powerful new business lobby are determined that it's going to be that way. Rep. Wright Patman's Small Business Committee, with \$166,000 to spend, is off on a series of local hearings to whip up real business determinations. He probably got good contracts.

And, businessmen like Wilson's afraid to view agreement as an essential defense industry and strategic it controls needed for war weapon construction has got the same blue-sky look.

Patman ad. Who, no matter how right, can agree with the three most powerful political elements in the country—labor, small business, defense—against him?

• W. Stuart Symington. The former Secretary for Air has put his teeth and determined to stay on in the Washington scene, as friends say.

Some months back, Symington willingly surrendered a big batch of his pretensions to Chairman of the National Defense Resources Board to Charles W. Wilson's Office of Defense Mobilization.

But then followed some developments Symington hadn't anticipated.

• NSRB's function of longrange mobilization planning was clamped by the White House's creation of a special board to do the job, under the chairmanship of Cokerless Broadcasting System's president, William Paley.

• Symington's invitation to after dinner White House parties caused.

• Last week, virtually the last vestige of NSRB's powerful air mobilization—was transferred from NSRB to the proposed new Undersecretary for Transportation, Elmo Ristad.

Washington insiders write the decline of Symington to the strategizing of Julia Stimson, Presidential adviser Symington does say. The modus op. the "Palace Room" (assistant off his the "Palace Room") didn't like the Symington threat to his power. Symington is too able, has close political friends, was not so good with the President's policies, reportedly. Guardsmen Symington is longer popular has to do with.

Frods say Symington recently advised the situation something like this: "Stimson's tried to put the noose on me. I know now, rather likely, we'll see whether he or I will be out."

Reconstruction Finance Corp.

Senators aren't going to settle for the President's belated enforcement of these rules to set up a single RFC guarantee to support the patient five-member RFC board. They'll insist on other changes in the law. Two of them:

• All RFC applications for loans must be open to public inspection. The committee has the finding that two loans to Kress-Foster Corp. of "desirable public interest" were transacted in complete secrecy. According to the Banking Committee's "well-qualified" members, under "playboy" rule, as with the Paley-Huey-Hayes-Gardner liaison of RFC domination by Duane Wilson, John Stevens. After the Wilson-Duane-Wilson-Willett liaison, headed by Franklin's adviser Donald Devens, with the lessening load, Guadalupe and Blue provided evidence for the Fulbright committee, were ousted from office by the President last November.

• GAO intervention in selected applications for loans must be ended. That those from RFC's loans to Northwest Airlines, Stevens claim that RFC granted the loan for the purchase of Stinsons without looking subsequently informed and pay to Northwest to make good on the loan.

No More Plane Contracts Soon

It looks as though there will be no more plane contracts for easy money, made from two comparatively minor USAF contracts, one for a lightplane, and the other, probably, for a tactical plane.

Now's the last bid for all the funds it had for aircraft and engine procurement by 10 December. It hasn't been given any new funds since.

USAF has now obligated 99 percent of its funds for aircraft and engine procurement.

Any procurement request for additional planes was supposed to go up to Congress by the beginning of January. Didn't occur as it was taking there before and April, at the earliest. Contracts under it won't go out before July.

Navy's Air Carrier

Navy has long suffered from the effects of that old order of former Defense Secretary Louis Johnson canceling construction of its supercarrier, the proposed 65,000-ton United States.

But now Congress and the public are all in favor of a second super carrier—with emphasis on capability, as well as size. It seems that the Navy, though, can't agree on one.

The extra-Navy fight is over whether the carrier is to have an "airstrip" or not.

• Vice Adm. John C. Casady, Deputy Chief of Naval Operations for Air, wants a flat deck, no planes can land on it, no combat deck, without catapults.

• Vice Adm. R. D. Dennis, Deputy Chief of Naval Operations for Operations, wants a carrier deck, as flat as the carrier commanders can get where they go.

The proposed compromise—a catapulting deck, that could be lowered at plane arrival times—haven't solved the argument. Adm. Duane claims it would be extremely too expensive.

—Katherine Johnson

AVIATION WEEK

Aircraft Industry Steps Up Subcontracting

Manufacturers wary of over-expansion in face of higher taxes, uncertain future.

By William Krueger

The increasing share of prime contract business passed out to subcontractors as the recession深ened may be evidence of a short-term but fundamental change in the aircraft industry's normal way of doing business.

Up to now most of the pressure for greater subcontracting has been from the government for a reason: steady and easily understood, it loadshed the prime contract business has been to exert national defense needs.

But there are growing signs among the manufacturers that they may be suddenly more important reasons why to be served by stepping up subcontracting. You see those signs when manufacturers like Curtis-Wright Corp. and Lockheed Aircraft Corp. break with past traditions and go in heavily for subcontracting because new appears the better way to do business.

• Why Subcontract?—Reasons for the subcontracting policy of firms and other manufacturers differ in detail. But the result is the same: a greater use of subcontractors that likely will become a practice adjunct to the industry as time goes on.

In the case of Boeing, which is subcontracting up the 60 percent of the

B-47 being built at Wichita, the firm says project policy was decided to gain to avoid artificially swelling Wichita's population with consequent economic and social problems.

In the case of Curtis-Wright, subcontracting (not an extension, licensing it at part or second source) to help manage a series of losses experienced during World War II, is part a permanent policy of new management, and in part an economic measure to reinforce its C.W. as a recipient of the subcontracting

Lochhead's case has elements of most of the others. During World War II, the company's subcontracting only 15 percent of its business. Now it is subcontracting about 40 percent of its work, even though President Robert E. Glass in the annual report stressed his work may not yet cut down profits.

The staff figures of the report give part of the reasons for subcontracting

Past & Future

The most significant development in the industry's return to subcontracting is the likelihood that the business out of the work will become a permanent feature for some contractors for some time to come. It is not as likely that, at the present level of subcontracting, subcontracting will become as widespread as it was during World War II, for these principal reasons:

• Prime contractors, of course, are not as large as during the war.

• Licensing of complete planes or engines is being used more widely than during the war.

• Large subcontractors are not subcontracting more now than during the war. The new ones that the dollar value of subcontracting will be proportionately larger during the war, but the overall number of subcontractors may be smaller.

• There's less subcontracting now during the post-war.

• September, 1941, a defense 16 percent, August, 29 percent.

• December, 1942, a defense, 29 percent, engine, 47 percent.

• December, 1943, a defense, 18 percent, engine, 35 percent.

• December, 1944, a defense, 38 percent, engine, 25 percent.

The development of subcontracting's role in the economy reflects the reverse in business of expansion for manufacturers. In contrast, subcontracting has in the aircraft field. At one point, Republic was subcontracting 60 percent of the P-47. But that unit, last in 1941. Already, in the early stage of subordination, Boeing is subcontracting about 60 percent of the B-47.

Subcontracting now of large subcontractors shows how well the industry remembers its World War II experience. A Harvard University study shows that subcontracting at times was more a headache than a help, because most of the parts derived out were small, requiring an elaborate checking system.

conversion problems. With a great increased airplane production, Lockheed had a large backlog in that field, combined with military orders, could easily make subcontracting a permanent policy.

In the year ending Dec. 31, 1952, Lockheed's after-tax 31 percent cost savings, compared to early 17 percent the preceding year. And the company was still a leading cost reduction company, according to its budget. Cost savings were projected to have a backlog of 1,000 aircraft units, until the spring of 1953.

Madly Military—But the picture for the company's future is reflected by the fact that 45 percent of the 5625 jet backlog is military. It can be seen that jet aircraft, planes (A-94, 1-33 and C-121) and long-haul planes (T-2, F-94, B-94C and PD-29), of which the F-94B, F-94C and T-2 were put into production during 1952.

Lockheed's 1953 production totalled 7,001,000. Number of military planes involved is not disclosed, but 37 Gov. inflation is not included. Four fifth of the deliveries were jet fighters and jet fighter bombers. These models of P-80s were delivered.

Lockheed's facilities expansion, while not as much in heavy military building, is also reflected in its 5625 aircraft backlog.

A \$2 million office building soon will start going up at Burbank to house administrative and engineering employees—who will be needed even after the present emergency.

A \$300,000 electronics laboratory with \$100,000 worth of special equipment is under construction. But, in the report points out, the electronics field is growing and demand won't slack off.

And if additional production space is needed, Lockheed believes it will be provided by the government, thus releasing the occupancy of a part-owner's garage space on its account. That of course, has already been done in the case of Martin. Lockheed's London office will reacquire D-50s and prepare the plant for later production of a plane, probably the B-47.

With that sort of regulated expansion plan, plus the stepped up subcontracting, Lockheed and other manufacturers will be up a resource of the 1945-46 emergency when.

Allison J-35: New No. 1 Engine

Latest model, A-25, gets 10,000-lb. thrust with revised compressor and turbine, and novel combustion system.

By Alexander McFarland

A new leader moved into the J-35 plant in the busy community of U.S. jet engine user last week in Allison division of General Motors. He is Frank J. McFarland, a General Electric-trained 14-731 engine designer whose division is designated as "No. 1" engine.

The new engine is rapidly reported to have a dry rating of approximately 10,000 lb. thrust, which is to a cost-advantage engine the highest power yet reported for any U.S. jet aircraft engine.

Closest competitor whose rating has been announced is the Super 1-850 which Curtis-Wright and Pratt and

Whitney are top level management committee for the last six months. It is being implemented as systems are completed.

Robert Lovett, Deputy Secretary of Defense is said to be providing special interests, cutting away Defense Department cost and time as an effort to place the management on a more cost-conscious basis. Major changes in Air Force management which have since been adopted by Army and Navy are freely attributable to Lovett's World War II service as Assistant Secretary of War for Air.

The organization of the office of Secretary of Defense structure is to be revised to simplify coordination between the three combatant and service headquarters of the Defense secretary and to guard against duplication of effort between the three services.



WORLD POWER is obtained from J-35 A-25 Allison in same diameter and only slightly more length than earlier J-35, suspended above it. Project engineer Deontray Godwin (pointing) shows some of new engine's features to Russell M. Rivers, Allison director of engineering.

progressing to build in this country, and which has a 7,200 lb. thrust rating dry. Allison's success in the Westinghouse J-40 has a dry rating of around 7,600 lb. The new A-25 is a high altitude engine, while the J-35 is a low altitude engine, a dry rating of 10,200 lb. in excess of 12,500 lb.², and the dash-letter Part 4 of Whitney's 197, which could be the next No. 1 engine.

New Design Features—The new Allison engine has a number of important new design features which presumably account for its big step up in power. Amongst these are the arrangement of single pods under the wing, to prevent

unbalanced air flow in this manner of the J-35, but is virtually a complete new powerplant, designed to the same diameter, 57 inches, as the older J-35.

Comparing it with the old J-35 argue these important changes are disclosed:

- Startup stages of compression is increased to 11 stages.
- Three-stage turbine is compared with two-stage.
- Overall length is 172 in. as compared to 146 in.

Possibly the most interesting modification, however, and an indication that the new engine has moved along a step beyond jet pre-heat is currently passing through across fighter and bombers in the best of the combustion section.

The section has eight individual burner cans, essentially similar to the eight burner cans at the older J-35 but these are exposed in a large outer can burner chamber, which would be similar to an annular type burner section, if it did not confuse the inner can. Allison calls this a "canular" burner section. After compression and ignition the mixture on the outer burner section is held into the outer can. In effect the individual cans act as "subburners" in the larger outer combustion chamber.

• **Additional Strength**—Allison points out that the construction of the burner cans adds to structural strength of the engine and to the ease of assembly. It is understood that the outer burner section is a load-bearing structure to which the inner cans are attached whereas the old style J-35 carried the cans attached to a supporting, load carrying member in the center.

Allison states that the engine is scheduled for first installation in the USAF's first jet Boeing B-47C Strategic.

It is stated that the new engine in the B-47C will deliver more power than the old GE 147 engine which powers the current production version of the Stratofortress, the B-47B. With the new engine, the B-47B will have a 10,000 lb. thrust dry, total power should be 11,200 lb. thrust. This would place the new Allison engine power at more than 7800 lb. thrust each or more than twice as much as officially reported. Actually reliable sources indicate in *Aerospace Wire*, the dry rating of the new engine is still based on 7800 lb. thrust mark and at least very close to the current 10,200 lb. thrust mark which has been the goal of all current jet engine development.

• **Longer Range Expected**—With total engine weight together with the lower fuel consumption as expected to result in a much longer range for the XB-47C than has been attained by the earlier versions of the Stratofortress. The engines are expected to be mounted in single pods under the wing, to prevent

uneven distribution of engine weight at any one point. Test experimental data of the XB-47C engine is scheduled to fly later this year, Allison stated.

Other interesting features of the new Allison engine are its all weather performance. Starting provision are made as the smaller winter and the bullet nose on the air intake. An automatic detector is also supplied. Heater for the de-icing is bleed from the compressor. In addition, an oil system is available. Highly remarkable, and there are about 1000 parts in the air inlet.

The J-35 A-25 is also its own compressor, an arrangement which is independent of external air supply. It also has an independent hydraulic system which operates the variable pitch air nozzle and the pitch trimmer.

The J-35 A-25 is going into production under a new Air Force contract described as the largest single engine order placed with a Commercial Motor. It includes large scale production at the Allison Indianapolis plant, plus substantial production by the Chevrolet Motor division of GM. The Chevrolet production will not a large plant at Tonawanda, N. Y. for production plus assembly. Additional production at other Chevrolet plants will feed into the Tonawanda assembly plant.

Northwest to Ground 20 Martin 2-0-2s

Northwest Airlines last Saturday was ground 20 twin-engine Martin 2-0-2s, 200 aircraft for modification recommended by a board of unclassified experts appointed by CAA Administrator Donald Nyberg.

The modification board had two aims as stated: discarding anything that might have caused Northwest's series of accidents with the Martin, unclassified establishments and operating procedures to make the plane safe. This was apparently the same procedure followed by the modification boards for the Lockheed Constellation and the Douglas DC-3 four years ago.

Here are the main findings of the Martin 2-0-2 modification board:

- No basic design fault was discovered to have contributed to Northwest's accidents with the plane.
- All unclassified plane types will undergo similar modifications in a series of three batches.
- No structural changes are recommended despite the great total number of other types changes recommended in the board report.
- Nothing as serious was found as to require immediate grounding of the Martin. Changes may be made one plane at a time, the modification board feels.

Despite the heavy to modify the

planes one by one, Northwest decided to ground them all at once. Std. NWIA Board Chief Master—"This week could be done over a period of time without withdrawing the planes from operation, but at the moment all suspending the program and a more efficient utilization of our mechanical forces, it was decided to withdraw the fleet entirely."

Two more reasons why Northwest grounded all 20 Martin at once: the company's pilots had been very wary of the plane after the Mar. 17 North went down broad over Bakersfield in recent series of accidents.

• **The Modifications**—Most changes listed as mandatory provide additional fire protection by changes in electrical, hydraulic and fuel lines, and precious No. 900 was laid down in report by the 15 commission standing 15 planes of the 200 and its operations. Here are some major items declared mandatory in the preliminary report:

- Replace dual fuel cross feed lines by single.
- Move oxygen supply lines to double compartment.
- Visit all battery cells have overheat and provide shorting.
- Give the battery vent line a negative pressure relief valve.
- Lesser than one gear on the rudder and a rudder cut-off of the autopilot and switch a field selector to reduce torque.
- Install separate circuit breakers for each steering control and warning light circuit.
- Improve lateral control of the plane, with special regard to control underwing conditions. (Method of advertising that is not detailed.)
- Install an oil-indicating man on the plane.
- Either replace the 61ST hydraulic valve in the 1000-lb. hydraulic system, or establish service life records or replace the valve with stronger material.

Ramspeck Given Leave By ATA for New Post

At the request of President Truman Air Transport Area Director, last granted Executive Vice President Robert Ramspeck a leave of absence to June 30, 1953, with the right of re-serve if necessary. Ramspeck has taken over as head of the Civil Service Commission for the duration of the national emergency, at the President's request.

The ATA director appeared on June 1 to tell it was Ramspeck. The ATA management will make its own plans for getting along without him. Some officials say General Stuart Tipton and others will fill in for Ramspeck on most of his jobs.

be cut back as defense production is stepped up.

The cut-back of civilian goods must be especially severe in the case of products made of metal. This is particularly true of goods that we scarce strategic metals such as aluminum and copper. Of our total defense production program, about half will go for "military hardware" — airplanes, guns, munitions, tanks and the machinery to make them. By the end of 1951 defense requirements are scheduled to absorb most of the metalworking production not required for essential construction and for the spare parts necessary to keep existing equipment running. For a time at least, there will be a sharp cut in the supply of new metal products available to civilian consumers. The defense squeeze on both materials and manpower will also cut sharply into housing and other civilian construction.

For the Short Run — Controls

In the short run there is no answer to the problem of meeting defense production schedules except controls. Sharp reduction of non-defense expenditures by government is essential and would help greatly. But the basic fact is that we cannot increase our total production fast enough to meet simultaneously both civilian and defense requirements.

Controls are needed, therefore, to switch resources from civilian to defense production, and at the same time prevent the combined demand for critical products from sending prices right through the roof. In the case of many scarce strategic metals such as nickel, copper and cobalt, the task of increasing output is especially difficult because our limited supplies are packed away deep in the earth in many quarters of the globe.

For the longer pull — and that is what we must face — there is another answer to our defense production problem that is infinitely better than controls. And this time, in contrast to World War II, it is all-important that we get the right answer to our defense production problem for the longer pull and that we get it right now. In World War II we gained our economy to meet the requirements of a

relatively short and decisive conflict. Now our leaders, however they may differ as to methods, are well agreed that, at best, "the conditions under which we labor may persist for ten, fifteen or twenty years." That is General Bradley's phrase.

For the Long Pull — More and Better Production

For this longer pull, the constructive answer to our problem of defense production is clearly more and more efficient production all along the line. It is true that overall we now have the most efficient industrial establishment in the world. But, even so, much of it is far short of optimum efficiency. Some plants using up-to-date equipment and methods are as much as six times more efficient than others in the same industry that are lagging in modernization.

Our Director of Mobilization, Charles E. Wilson, has clearly in mind this problem of increasing our industrial efficiency. The first step in his job, as he conceives it, is to get out an adequate supply of weapons to equip the army, navy, and air forces already mobilized or in process of organization by us and our allies. The second step is to make sure of our capacity to produce both "military hardware" to meet any increased requirements and the maximum possible volume of goods for civilian use.

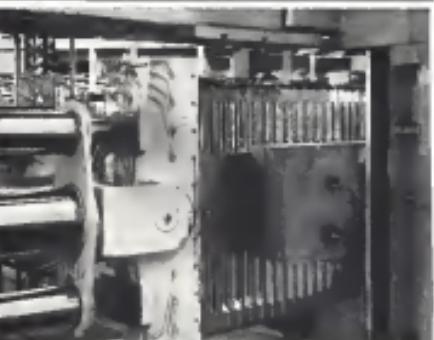
In concentrating on more and more efficient production, Mr. Wilson is squarely on the beam. We can attain his objective — by sustained effort on the part of each one of us backed by up-to-date industrial methods and equipment.

If we do that, we can maintain indefinitely an adequate defense effort and at the same time enjoy a standard of living higher than any other in the world.

Additional production and more efficient production are our surest safeguards against our two most menacing enemies on the home front — the deadly inflation that can destroy our fine economy, and the strangled government controls that can destroy our political freedom.

McGraw-Hill Publishing Company, Inc.

PRODUCTION



FEMALE DME of Hinged Burek Press, with heating elements in position at right, shown ...



ELEVATOR FAIRING, seen after rough trim. Perfect time was 10 sec., heating time 15 min.

How to Stretch-Form Magnesium

Aircraft manufacturers shows how to apply and control heat; solves other problems in metal's fabrication.

A printed and efficient method of stretch forming magnesium, developed by a major aircraft manufacturer, shows promise of streamlining the use of this material in plane construction.

There is no fundamental difference between the forming of aluminum and magnesium except that the latter metal is formed at elevated temperatures. And by carefully controlling the application of heat, magnesium readily can be formed, using the stretch wrap techniques already developed for aluminum.

Tool engineers at one of the country's foremost aircraft plants have, during recent months, solved the problem of how to apply and control the heat, as

well as using related problems, such as the selection of most suitable die materials and lubricants. The process, which is being patented, is reported to give highly satisfactory results consistently, even with part configurations that are difficult to form in aluminum, and is applicable to both annealed and heat-treated magnesium sheet. Elapsed perfect and forming time can be as low as five minutes.

Heat Control. Principal controlling factors are said to be die temperature (which must be high), and correct arrangement of heating elements to give optimum heat distribution for each individual part configuration.

For example, care must be taken to avoid overheating at certain forming areas, because these will result in localized excessive elongation and rupture before the rest of the part is formed.

Heat is applied by means of heavy resistance-type, radio and radiant heating units. Temperature is controlled thermoelectrically, using thermocouple type probes attached at strategic points around the ridge of the material being formed. Temperature must be checked and controlled separately at several points to maintain desired limits at all critical locations on the part to be formed.

Procedure. The heating unit is a straight resistance coil placed at the longitudinal point of a curved, highly polished reflector. As many of these units as required are placed side by side at a distance of about 5 in. from the material during the forming period. Exact temperature heating required and material for best results depends on the nature of the part to be formed and may vary at different points along the same line.

Normally after the desired preheat temperature has been reached the heating coils are rolled back, allowing the parts opposite full visual control of the forming operation. Parts as large as 48 x 344 in. may be formed at the present stage of development.

Die Hold. The press has been used with both male and female dies, including some employing screws. When blanks are used they must be preheated to slightly below forming temperature to prevent too rapid cooling after forming.

Excess heat is absorbed by the die during heating of the material to maintain its temperature within allowable limits for at least a half day of continuous operation.

The use of plastic in die material eliminates the need for die lubrication. Softening point of the plastic now being used is 275° F. and experiments have shown that temperature of the die will rise several degrees within 100 deg of that point during the forming operation. About 1 in. under the surface the plastic material remains at some ton pressure.

Magnesium's Advantages. Many parts are difficult to fabricate from aluminum because there is no metal die absorption layer of the material during forming. Such parts generally are too thin. By contrast, magnesium, when heated to the proper temperature, since the heat of absorption is approximately two to three times greater than with heat-treatable aluminum alloy.

Another point favoring magnesium for use in fabrication is the total absence of spalling.

At more extensive use is recommended in the use of this process. It is to be expected that wider use of magnesium in

4 things to look for when you need a new black-and-white print machine



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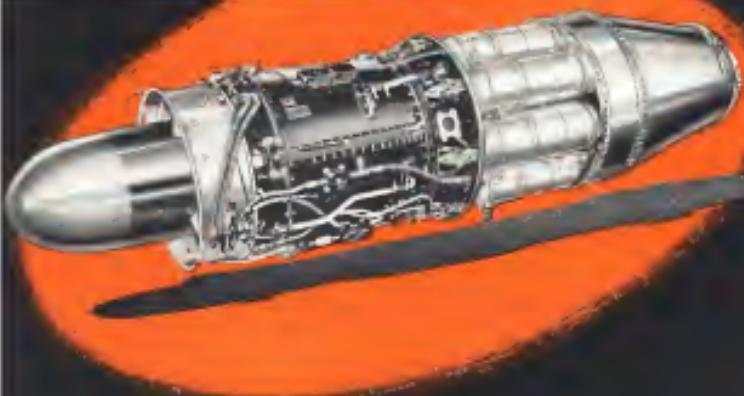
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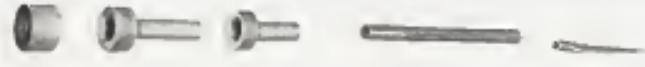
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BULLET REDUCERS: BLADE in the five steps shown from left to right. Chipped steel bullet weight 400 lb., the blade 200 lb.



WHITE IRIDIUM BULLET goes into 1500 rpm per min stock foundation. Reheated (angle) it goes back in stock expansion and temp.



BLADE TUBE comes out of press after third and final operation. From raw metal to rough new tube minutes instead of hours. Finished blade (right) is formed in a die.



Prop Extrusion Is Production Milestone

Great savings will result from fabrication system developed by AMC with Curtiss-Wright and others.

By Irving Stone

Air Force industrial planners have turned with private manufacturing enterprises to develop a new mass fabrication technique that marks a milestone in propeller production.

* The achievement: Hot extrusion of one-piece, tapered, hollow steel propellers

blades for high-speed military and commercial aircraft. Advantages include considerable savings in use of strategic chrome nickel molybdenum steel and reduced need for drilled holes, expensive and time-consuming machining, and valuable factory space. And the resultant blade is stronger than its welded steel counterpart.

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Mfg. Corp., Crucible Steel Co. of America, Uptite Furnace Co., Industrial Co., Bunting Co., and Div. McGraw-Hill. The extrusion is 1 by 1 in. blades, extruded on a 330-ton horizontal Loom press at the Al Development Center, Adams, Mich. During World War II, this piece of equipment, one of the largest of its kind anywhere, was used to extrude magnesium bullet. Extrusion of the extruded blade is done at C.W. (Culberson, N.J.) plant.

► Start from Scratch—The extruding process was run up from a cold start about 15 months ago. No recorded data were available on the hot extrusion of steel in the complex shapes and taper thickness required for prop blades.

Engineers started with stainless-steel and 4140-46 with a 1000°F. heat for extruding the 1550 red blades. But at this stage of development, the material used is 60 percent of the thickness recommended for fabrication of the comparable welded steel part. And as engineers with the present a guided and more data accumulated, this figure no doubt will be cut.

► Weight Strength—Also, more tape route probably will show a way to effect weight saving. Since the present part is not compensated for manufacturing advantages, the weight factor has not been stressed and the present cost traded out against the same in the equivalent welded blade.

But the cost of heat treatment, which includes cold annealing, and a more uniform, weldable structure is traded out with the extrusion process.

The extruded part starts out as a 40-lb. billet and ends up as a 200-lb.

rough blade. This extrusion simply sets the 750 lbs. of plate required for a solid billet of equivalent weight. Thus, 750 lbs. of material in the extrusion process gives approximately two blades as against one for the same part size with the welding technique.

The billet is purchased as a melt bath, furnace prior to the first extrusion step. The melt bath heating gives setting for good heat transfer and the melt prevents scale formation on the billet and lengthens the life by acting as a lubricant.

► Three Simple Steps—While hot from the melt bath, the billet is extruded in the press to give a semi-finished shank section, longer than that actually required, in the forward portion of the billet.

The finished piece is reheat for the second extrusion step, which tapers the shank by expanding the inner portion with rounded and pressure from both ends.

In the third and final step in the extrusion process the reheated portion of the billet is extruded into a rough, take shape, with the already-formed shank emerging first from the press. This operation takes less than 1 min. The take portion of the rough blade is a tapered extruded section with "ears" or ridges (which become the leading and trailing edges), running from shank to tip at approximately equal points. Taper in the extrusion passes is controlled by the relative positions of mandrel and die. Only about 0.17 in. of material is left on the blade for finishing.

► Taper Data—Thickness of the rough



SUBMERGED SPINNER

Propeller spin jet cooling nozzles at Aeropropulsion division of General Motors Corp. will be used for maximum high speed rotation rates of new prop designs. Right-angle gear box at top of shaft transmits power of 16000 R.P.M. engine to test

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...with elbow swivel nut
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Teamwork...



Once Again Pratt & Whitney Teams with Other Industries to Increase Aircraft Engine Production

★ IN WORLD WAR II, Pratt & Whitney Aircraft pioneered the system of licensing the automotive industry to help increase the output of its aircraft engines. So successful was this system that Pratt & Whitney, with its licensees, profited half the total horsepower used to power Allied combat aircraft during World War II.

IN THE PRESENT EMERGENCY, Pratt & Whitney Aircraft again is first to share its hard-earned engine knowledge in the common interests of national defense.

LAST SEPTEMBER, Pratt & Whitney licensed the Ford Motor Company to build the Wasp Major engine, currently in use on the B-36, B-50 and other long range Air Force and Navy Aircraft.

IN DECEMBER, the Chrysler Corporation was brought in as a licensee to build the J-48 Turbo-Wasp, which powers some of the fastest Air Force and Navy jet fighters.

STILL OTHER licensing arrangements are in the planning stage.

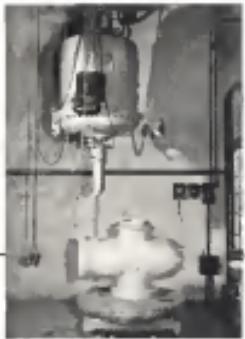
UNDER THESE LICENSING AGREEMENTS, Pratt & Whitney Aircraft—at no profit to itself—is already placing its own engineering and production experience at the disposal of Ford, Chrysler and others. They, in turn, will put their extensive manufacturing know-how to work on the task of increasing still further the expanding production of these vitally-needed engines.

THIS IS A TYPICALLY AMERICAN EXAMPLE OF TEAMWORK BETWEEN INDUSTRY AND THE ARMED FORCES IN THE COMMON INTEREST OF THE NATION.

Pratt & Whitney
Aircraft



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LEBANON
ALLOY AND STEEL
Castings
L

extruded tube at the shank end is about 0.25 in., tapering to approximately 0.09 in. at the tip.

Four in. the shank and are about 1.25 in. wide by 8.92 in. thick, running in about 0.75 by 0.50 in. at the tip section.

This dimensional relationship gives the approximate taper desired for the finished blade.

Final Forming—The tube is hydraulically pressed at the Colbrelli plant in two steps to produce the final shape. First, it is cold formed to give roughly an elliptical shape. Then, in another forming operation it goes into the blade-forming machine at a high temperature.

Nitrogen at a pressure of 1100 psi is introduced into the blade to assist the forming operation to force the material in close contact with the die.

Blade finishing operations are similar to those now used. Only major exception is that perforating on the shank

The blade is essentially rectangular in plan view, wider at the tip section. The tip is closed by welding or by a strip of injection-molded rubber. A ribbed rib runs through the center of the blade for about 5 in. back from the tip to prevent end cracking. The closure with rubber is more protective than with welding.

Stainless-Steel Lengths—Blades that can be fabricated presently at Admet are 94 in. long. One standard Pratt & Whitney VD10 engine is 8 ft long and is fabricated in an 80 ft length, the largest so far made to the extreme sections. This blade, extruded to 3 in. tip, will be used on the P.W. T-34 turboprop powered Douglas TG-146.

C.W. techniques say that they can extrude prop for 90% of the aircraft applications, except the most used on the B-52, which is older than those that have been made with the new process. Prop capacity is limited by a maximum cross-section that can be extruded.

A joint production is going through DeAdmet facilities now. An order book, right behind this one, will follow shortly. An early order and will be served to be available for the B-50 and the C-124A.

A prototype article for the Navy will be fabricated later this year with two applications possible—on a Cessna anti-submarine warfare plane and a Grumman ASW blimp.

Commercial Use—It will appear that C.W. also will push the extruded blade for service test in the very near future to another large field of possible usage—commercial research. Choices are that the plane will be Concorde and Stratovair and that foreign operators she will be interested.

C.W. will use the extrusion blade for its Turbolocator series in all three categories—airplane, aerospace and



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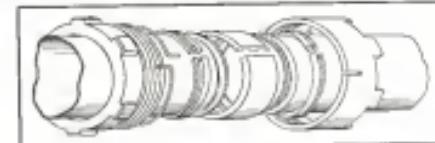
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simple application, without the need for special tools and fittings, it also finds a ready use in oil, coal-tar, hot air and other such installations.

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Bentover, tapered ears on male component engage lip of female. Panels are clamped tightly together when ears are bent over, preventing removal, or easy hand-tight.

Lightweight air transport strip panel construction with Roto-Lock fasteners makes them valuable for easy field assembly.



Welded aircraft skin sections secured with Roto-Lock.

New Roto-Lock Fasteners Solve Demountable Panel Problems



This portable shelter is made of hinged panels developed by the B. S. Hydrom Corporation. All panels are secured with Simmons Roto-Lock fasteners. Panels weighing over 100 lbs. are being planned for other temporary and maintenance buildings for lighter aircraft.

Panels of any material—equipped with the new Simmons Roto-Lock—can be fastened quickly and securely either at right angles or butt joints. No skill is required—just turn the tapered ears to lock, then turn again to unlock. Check these features of Roto-Lock—

1. Roto-Lock exerts sufficient pressure to form airtight and watertight when gaskets are used between panels. Curved fastener bows as well as heavy shear loads—providing a completely structural, integral connection.
2. Reuses completely into panels—no protruding parts.
3. Will fasten in unusually out-of-aligned conditions—locks in any semi-open position.
4. No springs or delicate mechanical parts which may be affected by severe temperature conditions or field service.

Portion of civilian, air freight and cold-storage shipping containers, walk-in coolers, demountable furniture, self-folding, and many other designs where demountability is desirable, are using this versatile fastener. All are illustrated in our literature. Write for your copy today.

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QUICK-ROCK
SPRING-LOCK
ROTO-LOCK

performance—although small, recessed blade probably will be solid and hard by extending or folding.

► Flight Test. Soon—the extruded-blade propeller hasn't yet been flight-tested but trials are not far off. Test stand runs are now being made at C. W. Caldwell facilities and at Wright Field.

C. W. has no plans for aluminum, a sensible use extrusion process for its C. W. propeller. It is a simple cold cut for combining to extrude the steel blade at about 1,000°, dropping it to C. W. for forming into blade shape and finishing. The outer blade segment doesn't add much to the cost of the blade because most of C. W.'s pay material cost plus are located at the Midwest, firmly near Akron.

► Production Factors.—If the company's volume of propeller sales remains about the same, a few less people will be required because the welding procedure will not be necessary.

With increased volume, in order to produce military propellers, more blades can be turned out with the same plant personnel, whereas without the extruded blade process, the company should have to go outside its present facilities for additional personnel.

Blades are being made to switch from the orbited type to the new extruded blade. Changeover probably will be progressive for ultimate replacement, as it may take up to about 15-18 months in about two years. All extruded blade production now is for propellers in the 15-18 ft.-diameter class.

Application of the extruded process is a task feasible for laboratories of other aircraft manufacturers such as landing gear struts, bellcranks, struts and rotor blade spars and derivatives.

NACA Reports on Heat Transfer

A new contribution to the literature of heat transfer has been made by the National Advisory Committee for Aeronautics with the publication of Tech. Note 2356 "Unsteady Boundary Layer Temperature Recovery Factors in Two-Dimensional Supersonic Flow," by Maurice Tuck and Stephen H. Sturts, Lewis Flight Propulsion Lab.

Surface temperature calculations for a thermally insulating plate in the absence of radiative heat transfer and stream lines for laminar boundary layer flow. For very low speeds, the transition parameter factor was found to be a function of laminar Prandtl number only. Later work showed that this low-speed transition could also be applied to supersonic laminar boundary layer flow.

Further analysis for turbulent boundary layer flow was limited to the case of

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constant fluid properties. The method of analysis presented in TN 2256 is an extension of this particular analysis to the case of supersonic turbulent boundary layer flow.

► Assumptions—In their presentation, Turner and Miller make use of a simplified model of the boundary layer flow for the present case. The local Prandtl number was assumed constant along any portion of the boundary layer, and equal in value to the local Prandtl number at the surface. Velocity profile was approximated by a power law. Pressure of the laminar sublayer was not considered except for the evaluation of the surface Prandtl number.

Based on these conditions, the transition recovery factor in turbulent flow was shown to decrease with increasing Mach number. For example, at a Mach number of 10, the recovery factor was about 5 percent lower than the laminar Mach value at zero.

Recovery factor was measured with an average of Reynolds numbers as an independent variable, but the effect was, in general, of secondary importance.

An approximate formula is presented for evaluation of the recovery factor which represents computed results within 1 percent, according to the Tech Note.

Aero Slide Rule Developed at Douglas

Douglas Aircraft testing division technicians have developed a new slide rule for the quick solution to common aeronautical problems.

Pedroled in so far as engineers and pilots the rule carries conventional G, D, and A scales and 20 other computing arrangements peculiar to aviation.

With the 6 x 1 1/32 x 3 1/32 in. device, Douglas claims that it is possible to determine at a glance the Mach number, true and indicated airspeeds, density altitude, temperature rise and many other aeronautical factors.

Pedroled may be calculated in inches per hour or with British units in centimeters per hour.

For speed conversions, there are scales for Conroy's, Farnsworth and mph knots relationships. Also, there are several relationships to the English and metric systems.

Report is that what features have been added, while they are, markings are dimensionally accurate to .0001 in. and that light metal core insertion accuracy is heat and cold.

Originally developed by Douglas' A. A. Molinoff and his associates, the unit, known as the Aero Rule, is being manufactured and sold by Ficket & Ebel, Inc., 5 S. Wabash Ave., Chicago, Ill. Price is \$10.95 for rule, leather pocket case and pocket size instructional manual.

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- ✓ When that free time is available

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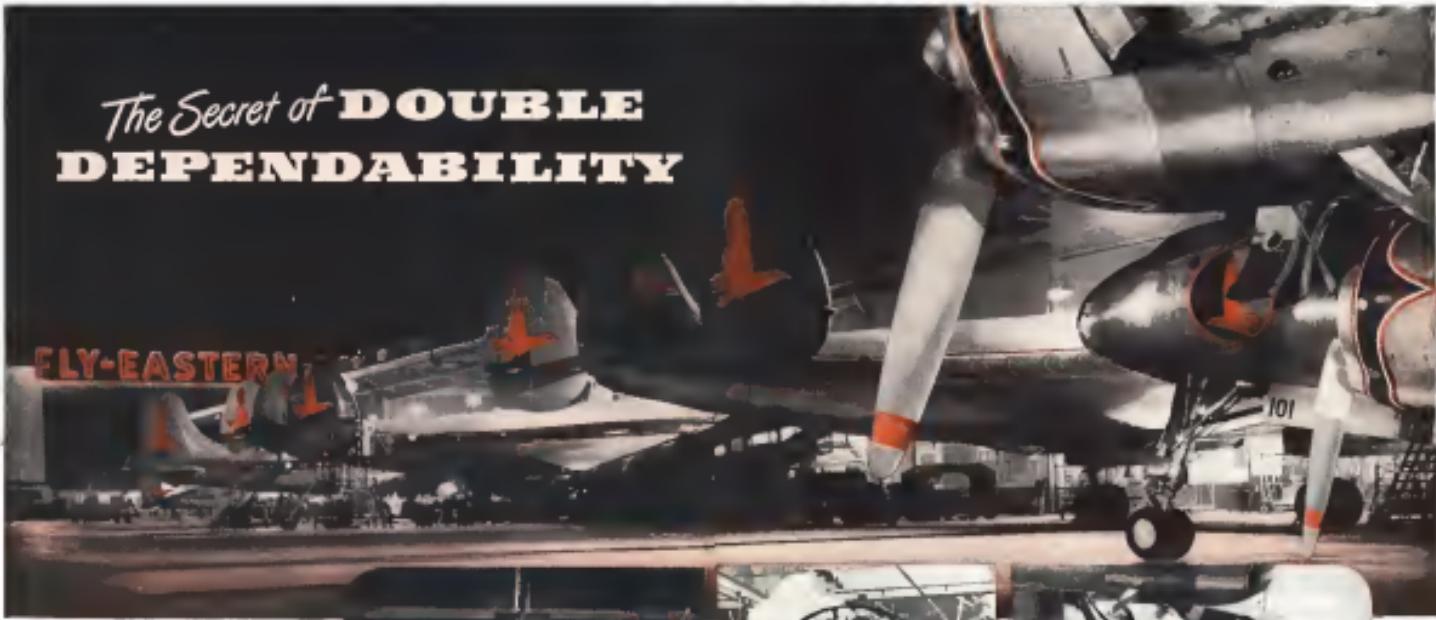
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Laminates

Fiberglass—plastic parts have many ballistic and dielectric uses.

By Baker Temple*

The principal interest in reinforced plastics in the Bureau of Ordnance is in low pressure laminates, generally based on Epoxy or Fiberglass, because of superior strength, weight, density, low pressure coefficient with Fiberglass, high tensile physical properties are attained at relatively low pressure. In addition, the low tooling cost for low pressure laminate parts is attractive, particularly where production may vary, be relatively small and the existence of design modification may be high.

► **Naval Applications**—Low pressure laminate applications in Naval aircraft fall into four main categories based on physical properties at fibrocure characteristics of the material:

- Dielectric applications
- Lightly stressed, nonstructural parts
- Ballistic applications
- Parts of complex contours.

Dielectric applications include those where dielectric properties are required, and metallic materials cannot be considered—radomes, and other intricate housing structures such as leading edge sections of wings, rudders, etc. Fiberglass stressed, nonstructural parts are those where high rigidity with minimum weight is desired, such as in hatches, doors, fittings, bulkheads, wing tips, and so forth.

Ballistic applications are those which take advantage of the greater resistance of low pressure Fiberglass and related laminates. One example for many applications is the gun mount housing for the gun and gun mount assembly used in Naval aircraft in the last war, is an example of this type of application. The plastic laminate is a rigid support material for the self sealing tail, that will not split or sever when punctured by a projectile.

Another type of application based on the ballistic performance of low pressure laminate is a link and trigger arm which is superior on a weight basis to metallic sensors. In this connection, it appears that link related laminates should be considered for aircraft framing, as well as for housings for instruments and equipment where dielectric resistance may be required as an added feature.

Parts of complex contour include

*Fiberglass and materials engineer.

Naval Ordnance Laboratory, Bureau of Ordnance, Technical Division, Chicago, Illinois.

Attorney of the Plastic Industry.

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Quality of materials has a lot to do with the quality of hardware produced for your products. That's why every coil of spring and every shank of fastening pin or chemist, and every material required for the series NUT manufacturing process is subjected to rigid "entrance control". The primary raw material, steel, gets an intensive check-out. Four laboratory procedures must be conducted on samples from every steel lot. They are: (1) Hardness and Alloy Test—samples are checked to insure against free-machining, thus used to determine the correct heat treatment. (2) Microscopic Analysis to determine the actual structure of the metal.

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Speed Nuts
FASTEST THING IN FASTENINGS

These such as air ducts which are difficult or impossible, particularly in limited quantities, to fabricate from metal. Parts in this category are those in which the selection of a low pressure laminates is demanded largely upon the nature of the fabrication process and to a lesser extent upon the intrinsic engineering properties of the material.

Potential Applications—Potential applications, some of which are under development, include battery cases, insulation bags and chains, auxiliary fuel tanks, rocket tubes, propeller drive casings, major condensers, camera cases, oxygen bottles, fuel storage tanks, bulkheads and equipment bungs, and certain classified nuclear and missile systems.

Post-forming laminates are extensively used in a variety of lightly stressed applications, such as brackets and other shaped parts, while production laminates may be formed by post-forming techniques to produce complex parts of complex shapes. Post-forming is used most extensively by the West Coast airplane manufacturers (one of whom developed the process). By the end of the last war, the aircraft requirements for post-forming had increased to a very substantial volume. It is anticipated that this will again be the case in the aircraft industry.

Some of the conventional high pressure laminate applications in aircraft are control panels, loadcell spacer blocks, terminal base, base plates for panel controls, raised film expandable electronic devices, and other electronic and electronic parts.

There appears to be a trend away from the use of phenolic laminates for hydraulic parts such as pump valves, because of past difficulties with dimensional stability. Valencene has been and is very important quantities for lock nuts which are employed in great quantities in airplane interiors. However, it is possible that nylon will also be used extensively in the future.

In materials development we need laminates with greater strength at 300 deg F and above and laminates that are extremely resistant to high-speed projectiles in both air and space vehicles.

Roche Projects—The Bureau of Aeronautics has research and development projects involving reinforced plastic parts:

- Cessna Autocommand Laboratory sign and fabrication of a model wing
- Boulton-Paul/Chalk Laboratory—development of heat treated resins
- General Tire/Tire-Mile—drugs and fab resins of pilot protective helmets
- Fibre Research Corp.—Ball armor investigation
- Norden Battery and Guide—design

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specifications of today's high speed, high altitude aircraft. And for the elevated service requirements of planes of the future, Rohm & Haas laboratories are working to raise the standards of transparent plastics to even higher levels.

Our laboratories and service departments, with their years of experience in working with plane manufacturers, are ready to assist you on technical problems in the aviation applications of PLEXIGLAS. Complete details on properties and methods of handling are contained in our Design and Fabrication Manual— yours on request.

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F-89 System Mockups Aid AF

Northrop designed and built system mockups will be used by USAF to indoctrinate ground personnel in the operation of the F-89's first fighter-interceptor, the F-89 Scorpion. The "Fleet Classroom" consists of graphics and accurately drawn mockups of armament, instrument, test

ejection, hydraulic, fuel, landing gear, air conditioning, and other systems. They will be flown from base to base to indoctrinate the crews of maintenance technicians with the speedy ship.

Scorpions are being produced on un-disklosed numbers by Northrop for the USAF.

bus. The entire mechanism is installed in the fuselage and is adjacent to the nose and is readily accessible for maintenance.

A modification of the DC-3 hydraulic system with the gear selector valve removed and two check valves installed allows both planes to feed the system simultaneously. Recall is automatically lost during gear retraction.

• **Wheel & Brake-Here it has Delta** is going to equip its first with wheels and brakes. It is starting immediately to install the "Wave Type" Goodyear wheel on DC-6. The wheel is 9548505. Current DC-6 suspension wheel will be mounted on DC-6s as

their wheels wear out. When the stock of DC-6 wheels are out, the 4s will also be equipped with the wave type, giving interchangeability between the two planes.

• **Brake shoes.** DC-6 single-disc Goodyear brakes go on DC-6s. DC-6 single disc brakes go on DC-6s. DC-6 multiple disc brakes will be disposed of. Super DC-3 brakes will go on reengined DC-6s. Money-saving idea is use of new, heavy type iron brake discs on DC-6s until they are worn to the maximum limit of approximately 750 in. Discs will then be transferred to DC-4 brakes which use cast webs, only three discs each time wear down.



FLIGHTMETAL Imagineering measures the creep of a fighter's skin

Exactly how much will an aluminum alloy stretch under a certain load at a certain temperature? That's the kind of fundamental data designers must have to meet today's ever-increasing demands on aircraft performance. Alcoa research works constantly to produce the facts they need.

Shown above is a battery of creep testing machines used by Alcoa development engineers to measure aluminum alloy stretch under load at temperatures up to 600° F. It's only a small part of the specialized facilities which keep Alcoa technical information complete and up-to-date.

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Alcoa's complete library of design and fabrication information is available now to help you train employees and/or your own knowledge. What manual or aids do you need?

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Describes methods, step
by step. 61 pages.

• Cleaning Alcoa Aluminum
Shows, drawing methods,
step by step. 61 pages.

• Machining Alcoa Aluminum
Shows and by Alcoa Tools,
methods, specific tools.
61 pages.

• Welding and Soldering Alcoa
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and in all techniques.
122 pages.

• Aircraft Aluminum and its
Alloys. Properties and
processes, etc.
124 pages.

• Designing with Magnesium
Gives specifications, fabri-
cation methods.
229 pages.



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Now you can have a lightweight, continuous-duty, explosion-proof motor. This new construction in integral horsepower ratings represents another Westinghouse first in the Aviation industry.

This revolutionary dc motor is completely self-contained. No driver or other external ventilation equipment is required. Special flame arrester design provides complete protection and permits continuous-duty operation... with only a slight increase in weight over corresponding open, self-ventilated motors.

These direct drive motors cover a range from 1 to 4 horsepower and weigh from 29 to 38

pounds. They are available with standard A-N-D mounting pads or with special mountings. Radio noise filters are available. This new design has been explosion-proof tested according to USAF specifications.

Look into this new motor. Call your nearest Westinghouse Office or write Westinghouse Electric Corporation, Aircraft Department, Lima, Ohio.

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**AVIATION
EQUIPMENT**

to 390 hr. before they must be removed from the hubcap.

► **Hawker-Siddeley-D. J. Dye**, Delta's representative of maintenance, made the following observations:

• **Flexible II-Maintenance** is negligible on DC-6 windows now that time is taken to keep cleaning fluids away from the panels.

• **Spark plug**—Champion 83751 plugs are used exclusively on all engines and are changed at 300 hr. Plugs are reconditioned and they become reusable.

• **Ski-dash**—DC-6 cabin upgradings done by being converted to use Skidash fluid. The airline expects better service and reduced maintenance. Skidash coated nylon paint is used on the upgradings areas to avoid constant cleaning. Cost of \$75 per gal. per batch of this special paint is an estimated cost.

• **Volvo**—water/Water—Hydraulic pump water kits are being installed on all DC-4 and -6 aircraft.

• **Locostat**—Forsman—Black and white locostat. Features plastic with a strength nearly as flexible as glass. Through the outer black surface can be placed easily worn and torn debris. One placed in a prominent position in the cockpit of DC-4 coach planes, advised "Watch your language, the passengers can hear what you say." Passengers at close to the cockpit on coaches.

• **Instrument bays**—In the first month that instrument shipping boxes were used to transport parts from line to line to repair base and vice versa, an instrument delivery, planned for 90 minutes. Now, at 100 ft. off the platform, under top and bottom of the instrument bays, is lined with 2-in. foam rubber pads leaving a space in the middle just large enough for an instrument to fit snug.

• **Tenn & Bird**—Two Elgin-Pioneer electrically driven two and four-pole, solid carbon commutator DC motors have given excellent service since installation. The cars present no maintenance difficulties and like power to be very sensitive instruments. Their overhaul period now is 2500 hr.

• **MID**—Bendix's instrument shipper from the Bendix Flightgear Master Division, Division and Instruments to very close tolerances. Bendix is that you can understand a MID with one transmitter, thereby eliminating a concern of installing a separate MID) is a great transmitter. Bendix is flexibility of component application and selection to greatest degree.

That Delta is a Bendix customer is indicated by their comparative percentage figures. 1949 to 1950 increase in revenue passenger miles—12.2 percent; freight ton miles—up 42.5 percent; net profit after taxes (net profit total \$39,640 to \$50,275).



Delta Douglas
DC-3



DC-6



UNITED
377



Delta Douglas
DC-3

DC-6

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... all are equipped with the new Hartman 400-ampere high interrupting capacity cutouts

Modern wide speed range generators of large capacity—designed to meet heavy load demands of electronic devices and other equipment formerly hampered by non-electrical contact—pose unusually difficult control problems.

For example, 38-volt generators can produce up to 175 volts if a short circuit applies full field at high speed or on overload. In addition to being able to interrupt these high voltages from sea level to 50,000 feet, contact relays must also give trouble-free operation through thousands of cycles at rated capacity and without wide temperature ranges, dust, humidity, vibration, corrosion and shock.

These new Hartman Reverse Current Cutouts have an interrupting capacity greatly in excess of all requirements under all conditions. That's why today manufacturers and operators are turning to these new cutouts for use on new and existing aircraft.

So if your problem involves dc controls, see it over to Hartman where it will be analyzed, engineered and produced with an efficiency that comes from nearly half a century of specification,



New Haven 400-Ampere 25 Volt Reverse Current Cutout
6A 55800



New Haven 400-Ampere 25 Volt Cutout for aircraft with ground fault protection system (A-7516)

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While there are other switches that meet specifications, the performance records of MELETRON switches stand unchallenged.

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New Landing and Taxi Light Pair

A new, twin landing light/taxi light combination for small and medium non-transporthype aircraft has just been announced.

The "Wing Light" is being marketed by Aerofit Aeromotive, Inc., P.O. Box 4178, Ft. Worth, Tex., who describes it as high in efficiency and low in cost and weight.

The \$37.50 kit consists of one G.E. clear lens, sealed beam landing light, with a 3-watt, continuous burning lamp; a diffused lens, two 15-watt, light, capable of long periods of illumination, two AN type toggle switches and two rubber mounting brackets. Lights require 10 amp at 12v, total weight is 2.6 oz.

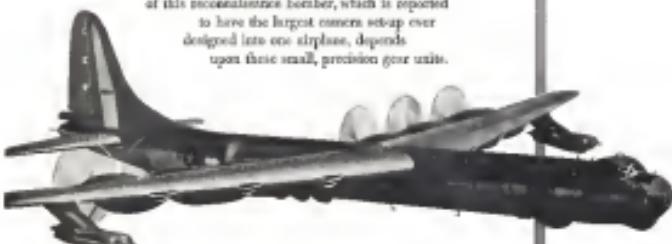
The firm recommends that the landing light be mounted on the left wing leading edge beyond the propeller arc and the taxi light on an equatorial center of the right wing. Standard wing brackets should be followed, the wing being mounted through wing inspection openings. The small landing light can be mounted on the center leading edge of the wing, if desired, but must be fitted to about any metal or fabric-covered aircraft down to maximum weight planes. The manufacturer claims that flight tests conducted with an A-1 Lorraine showed that there was no loss of speed due to installation of the lights. The frontal area of the leading edge is negligible.

A simple external adjustment has been provided to position the light pattern.

Western Gears

"Open and Close Her Eyes"

Cameraman doors of the giant new Convair R-36 are operated by nine Western Gear actuators, of the type shown here. Thus, the photographic effectiveness of this reconnaissance bomber, which is reported to have the largest camera setup ever designed into one airplane, depends upon these small, precision gear units.



Small actuators, large gear units, or any type of gear product for ground or air-borne use—properly designed, manufactured, and tested—are available from Western Gear Works, backed by fifty years of gearmaking experience.

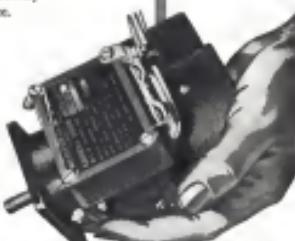
These camera-door actuators for the Convair R-36 incorporate a triple reduction spur-gear train with 96:1 ratio, precision for handscaling, torque-limiting clutch, and external adjustment of limit switches. Designed for operation in temperatures ranging from plus 160° F. to minus 65° F.

For further information, or for copies of Aircraft Bulletin 4811 or Aircraft Equipment Bulletin 4800, write Western Gear Works, P. O. Box 109, Lynwood, Los Angeles County, California.

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NEW AVIATION PRODUCTS

Missile, Plane Relay

A line of miniature dc relays designed for brief periods of high performance in missile and for permanent, reliable service under extreme operating conditions are now available in blind mounted by Standard Drive, Inc.

The units weigh about 1.0 oz and are being produced in a Type A style for operating temperatures up to 142°F (60°C) and Type B for use in ambient temperatures, limited to 105°F (40°C). They are available with contact assignments up to six pole-double throw and are designed in strict USAF Specification MIL-R-5732.

The low-profile, solid relays have a high efficient acting type of mag wire structure and balanced parts designed to permit steady contact operation during 10G vibration at shocks of 50G, according to the company.

Relay contacts are successfully rated 2 amp at 38V dc non-inductive permanent installation. For permissible operations such as in guided missiles, contact rating may be increased to 1.5 amp. In addition, if the contacts are rated to 1.5 amp, the relay should not exceed 90 to 100 mils of travel during the first 100 mils of operation or less than 0.09 in. With solid contacts, relay ratings 21 at 10 mils and 10 at 20 mils. All from 150 N. 15 St., Philadelphia 7.



Mammoth Joint

This is the largest expansion joint ever made, according to the builder, Zales Bros. Co., Wilkes-Barre, Pa.

Eight of these large joints, 13 ft. in diameter, are being used in a sensitive test project at the Lewis Flight Prognostic Laboratory in Cleveland, as, according to Zales, they are installed in the baffle between the primary and secondary coolers in the altitude exhaust

duct which carries exhaust gases from jet engines, piston engines and other equipment undergoing tests at simulated altitude conditions.

The joints are made of stainless steel and are used for working pressures from standard to 65 lb. at a temperature range -50 to 61°F.

The units weigh about 1.0 oz and are being produced in a Type A style for operating temperatures up to 142°F (60°C) and Type B for use in ambient temperatures, limited to 105°F (40°C). They are available with contact assignments up to six pole-double throw and are designed in strict USAF Specification MIL-R-5732.

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The device can be used for filling electrolytic capacitors even with bonding compound, transformer with potting compound, weatherproof jackets with filled wax, enclosing insulation on fibers with molded wax resin, filling insulation with sealing compound, and similar purposes.

It is a variable discharge spark gap equipped with a single insulating spark gap. When the single leaves in the present gap are driven by motor through a gear and ratchet mechanism, the device can be operated by non-defined frequency. The transient is well defined per cycle, it can be varied by pasting and rotating the ratchet wheel, as required in the group specific requirements. A housing 14 mil thick is mounted over the insulating section of the unit. Thermistorically controlled strip and bridge heaters are provided around the tank as the gear housing and at the nozzle to produce controlled temperatures up to 140°F. This is far materials that require heat to produce fluid consistency.

Various nozzles are available to meet different filling requirements. The

unitary and the unit forcibly each are tested with an accuracy of ± 5 percent, can be operated at high speed—4 ft per second. Variable discharge can be changed in two seconds without use of tools. Address 95 Park Ave., Natick 10, Mass.

Hardness Tester

Hardness testing of metal hardness on the job can be made quickly with the Finsol portable hardness tester simply by pressing the handgrip on the side of the instrument. Six additional oil cushions in addition to the one shown under is required.

The instrument is designed to test almost all shapes and forms of metal and accurate reading is obtainable on sheet metal as thin as 0.020 in. and round bars as 1/8 in. in diameter. Hardness readings can be made on either Brinell, Rockwell, Diamond, Peral, or Tors-Tensile scales. Danger of damaging surfaces of small components being tested is minimized by use of small indenter with a maximum depth of 0.03 in. and a diameter of 0.06 in.

The point penetrates the surface of the material until the action of a spring and a fixed lever begins exerting a maximum force of 15 lb. The device is forced upwards against the spring load by an amount depending on the hardness of the material. Movement of the indenter forces liquid from a circular tube in a regular ratio which enables the instrument scale and indicates hardness value directly. The tester is distributed by Neopac International Inc., 521 Fifth Ave., New York 17.

ALSO ON THE MARKET

Sub-microstrain friction expansion belt for strength and stability over wide range of temperatures is available in two sizes. The smaller belt has a width of 10 in. and ranges from 30 mils to 60 mils. It is at 70°F. The larger, concentric, loads, they are up to 100 mils. Both are in sizes and at high strengths.

Precision potentiometers, in two special types for use in feel gauges which are not yet available, are being produced by the General Co., Newton, Mass.

Melrose "Dominator" comes in the mid of the latest. It's a new hand tool with adjustable tripod support and a third wheel which enables workers to move 400 lb. loads without aid in lifting or balancing them. Made by Melrose Mfg. Co. Inc., 719 Aviation Blvd., Los Angeles 11, Calif.

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Leading in credit points of difference, Bristol Automatic Precision Control Equipment on fighter planes, bombers and transports.

Products of over 60 years of Bristol pioneering in the field of precision instruments, they have proved their merit under exhaustive flight tests in extreme climates and at high altitudes.

What are your instrument control requirements? Bristol's Automatic Division is especially geared to design and produce circuit control devices such as engine temperature controllers, timers, and other electronic and electro-mechanical control devices.

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SHORTLINES

► Air Express-Shippers through New York, by air express the last week in February numbered 41,915, almost double the 21,612 of a year ago — for all January, shipments numbered 408,256, up 19 percent.

► American Airlines—Only transoceanic metal service with routes through Washington, D. C., America, at present intended stopover privilege cities at San Juan, Miami. Maintenance cities that also will well with business and military travelers.

► British Overseas Airways-BOW now stops at Zurich en route to the Middle East. This is the line's first entry in Switzerland.

► Capital Airlines—Capital's 1950 travel agency branch joined a half million-dollar-plus—over 1949. Company's Constellations are said to be the main reason. Capital plans to buy more. Courses when it gets the money. January operating profit of \$16,000 and air profit of \$8,642 in gross of \$245,715 compares with year-end sum of \$16,677 and a gross of \$16,893.

► Flying Tiger Line—Tiger net profit last quarter was \$3,967,000, or 47 cents a share, up 40 percent to \$3,558,321. Maintenance work sold by the line is the final year to June 30, 1950 total to about \$1,000,000.

► International Air Transport Ass.—Closing most international traffic transoceanic in December at \$45,004,000—second best month in history. Total in 1949 was \$147,851,000—an 18 percent from 1949.

► KLM Royal Dutch Airlines—New, specially designed airspeed limit shells now offered by KLM may tap a lucrative market as well as others in the world.

► Los Angeles International Airport—Air traffic at L. A. in 1950 hit an all-time high in 1950. The 1,343,884 passengers were +14 percent, gear, we read, 22,357,000 lbs, was up 17 percent, air express, 9,883,710 lbs, up 129 percent; air freight, 31,597,051 lbs, up 113 percent.

► Los Angeles Airways—Helicopter service

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SECTION 3

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air operating expenses in December were to \$150 per aircraft mile, the company with \$164 expense per mile a year ago. Diesel maintenance in December was 13 cents compared with December, 1949's 35 cents. General and indirect maintenance of new aircraft compared with 21 cents a year ago. Fuel costs miles at \$57.1197 were slightly over December.

► Mid-Continent Airlines—January traffic, by good weather, passed 48 percent over a year ago to 34,139 passengers, 10,297,266 passenger miles.

► National Airlines—January net revenue was \$276,611 or 27 cents a share, in gross of \$1,450,742.

► Pan American World Airways—Passenger traffic in Pan Am's Seattle-Minneapolis route gained 21 percent nonstop and 35 percent nonstop in January, compared with 1949. Pan Am could upgrade the Pacific-Eastern interchange, Miami-New York, without loss, data there months. Six months would be, we feel, a long time on this one. Pan Am calls for 35 planes a week to make the interchange run, planes today are being tested abroad.

► Philippine Air Lines—International and inter-island flights of PAL were 99 percent completed in 1950. The DC-3 and DC-4 operating San Francisco-London via Manila completed 99.95 percent of all scheduled flights. International completions are 97.76 percent. Local flights of 60 percent completed with 10 percent in 1949 and 94 percent in 1948.

► Pioneer Air Lines—Route mileage of Pioneer for month passed from 9620 miles to 10,722 miles. New schedule include two more daily roundtrips, Dallas-Fort Worth and Atlanta. Setting daily route to seven. Founder says the new schedule results from pressure of heavier traffic demand. Net profit of Pioneer in 1949 was \$371,151, compared with \$163,661 in 1948. Total revenue declined 24 percent to \$956,337. Total fare declined from \$20.79 per ton-mile to \$12.87, or 36 percent.

► Trans-Canada Air Lines—TCA has lagged in summer expansion on western services to a 93-day touristic fare ticket validity. Board trip fare is 14 the one way fare.

► Trans-World Airlines—TWA is now using the Lockheed "Speedpak" for express cargo carrying on its Constellations. The pod is used on revenue mail when demand rises. Eastern Air Lines has used the Speedpak for some years now.

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EDITORIAL

Security Break? A Case History

Newswise has written what we hope is the last chapter in the story of "Scoop No. 1211-J." This unusual news magazine with more than 400,000 circulation has told this last chapter recently.

It is not often that we can devote so much space to the background of any one story in *Aerospace Week*. But this one, which aroused suspicion, needless criticism, and unfounded rumors, is worth going into.

Finally for the record, here is chronological order of important chapters in a case history of one controversial story that appeared in *Aerospace Week*.

West Coast Speculation

Los Angeles Times' able, enterprising Marvin Miles, aviation editor, who in 1947 took *Aerospace Week's* X-11 newspaper flight story off the news wires and wrote it under his own byline, expressed suspicion in his column column Feb. 2 after the most recent revelation about a company in his own backyard, Seal Miles.

Aerospace Week's disclosure of the four-engine turboprop supersonic intercontinental bomber (Model 1211-J) proposed by Douglas gives rise to interesting speculation.

Was the basic missile deliberately left in the box of Air Force classifications (possibly "secret")?

Or was it a "planned release" placed by the Air Force for propaganda purposes?

Title publications, with many a secret pipeline into inner Washington circles, have a distinct advantage in gathering information on new developments, proposals, trends, etc. How much of the information they publish is another matter. Not very much, we think.

We advise their prodding way but occasionally question the advisability of publishing some stories—unless they're official plans—unless we let the Pentagon with its experts do the filtering, only to tell: "Caveat should project classified."

The AP Story

Washington Post, Feb. 3—An Air Force spokesman told today an inquiry is being made into publication in an aviation trade magazine of specifications for a possible new four-engine jet bomber of intercontinental range.

The spokesman told a reporter, "The Air Force is making its own inquiry of the writer, which has been reported by the Inspector General as a possible violation of a secrecy clause."

He added, however, that "it is Air Force policy for the Inspector General to look into my report" but might consider severely. He added that in this instance it is not known as to whether "there is or is not a violation."

The inquiry is based on an article appearing in the Jan. 29 issue of *Aerospace Week*, which discusses reported specifications by Douglas Aircraft Co. for a new jet bomber. Officials of the magazine could not be reached immediately for comment.

The magazine states the proposed plane design is designated 1211-J, would have a range of 10,000 miles.

From *An Editorial Here Feb. 12*

— If the Inspector General sends us a mountaineer to us we shall be glad to tell him exactly how a sheet of Douglas printed brochure fell into his hands. The tale will remind you of the story recently about the *Washington newspaper man* who picked up as the sheet a sheet of waste paper from NACA and found the contents worthy of printing.

What Does This Mean By This?

Time magazine in its Feb. 26 issue rounded up a piece on bombers and the latest to be revealed was the Douglas 1211-J, designated "by *Aerospace Week*, which constitutes enough the Air Force by describing aircraft that comes on the market but long after they are being talked about in West Coast bars."

The Newswise Story, March 12

To its competition, McGraw-Hill's *Aerospace Week* magazine sometimes seems to be more the product of a few of rains than of a staff of highly competent reporters. Even the Air Force has had occasion to question the manner in which *Aerospace Week* collects its frequent scoop on new aircraft.

(When, for instance, *Aerospace Week* revealed that a plane had passed the speed of sound—*Newswise*, Jan. 21, 1948—a full-scale investigation proved that the magazine's reporters had done nothing more than take the proper quotations in the right place and then print the stories.)

Last week, a perfect example of the magazine's "exploits" appeared came in light and, as usual, it boiled down to good reporting. The scoop revealed was publication in its issue of Jan. 29, of a sketch and a full set of specifications of Douglas Aircraft's 1211-J intercontinental bomber, a basic engine just now in the drawing-board stage.

Even as newswires picked up the story, some editor growled that *Aerospace Week* must have got the pass by violating security regulations. The Air Force promptly announced it would probe the leak. *Aerospace Week's* editor, Robert H. Wood, decided to mix in a bit of the trouble. Last Tuesday he met Leo Lee, the writer who had got the 1211-J story, went to see Maj. Gen. Joseph F. Carroll, Director of Special Investigation for the Air Force.

Lee's explanation was disarmingly simple. While walking in a public corridor of the Postage, near the Air Force's own public-relations office, Lee had noticed a fancy airplane picture taped to the front of a message box on one of the Postage's fleet of telephones delivered billets. Curious, he picked the picture up. It turned out to be a carefully concealed page of a Douglas brochure describing the 1211-J in detail. Nowhere on it was any mention of secrecy. Lee assumed, if it was writer for Douglas on the back of a passenger's plane, it was certainly his game for *Aerospace Week*.

The only questions not yet cleared up were (1) Was or wasn't the 1211-J considered within a classification? (2) If it was, how did a message get hold of the picture? If it knew these answers, the Air Force was still talking.

—Robert H. Wood



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Constellation checks will be made of engine performance — as successful in existing ground tests as flight altitude is now being made for the U.S. Air Force's strategic bombers B-36 and B-52 in the Sperry Engine Analyzer.

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Upon finding this information is passed on to the ground crew who can proceed at once with the necessary maintenance work. Results: more time time inspection out from bases to bases — savings of thousands of dollars annually.

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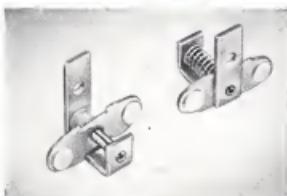
Rollpins exceed the shear strength of cold-rolled pins— are easily adapted to jig assembly or automatic hopper-fed

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